

# COMPUTER SHOPPER™

MONEY SAVING ADS & ARTICLES

## Franklin Ace 2000 New For Christmas

In This Issue...

- Santa's Discount Shopping List
- Apple Introduces New Peripherals
- Mailing Label Program
- BASIC Data Base - Part II



085500CAGRA00  
RAY CRAGLE  
37WALLACE RD.  
PRINCETON JCT  
NJ 08550

1285 12

Premium Quality! 100% Error Free! Lifetime Warranty!

**DISKS** For Apple SS/DD-40tk DS/DD  
from 33¢ from 46¢ from 54¢  
UNITECH (800)343-0472 IN MASS (617)"UNI-TECH" see ad index

**Don't Risk The Unknown**

Brand Name Diskettes at the Lowest Prices!  
Disk World! See Ad Index!

THE WORLD'S LARGEST COMPUTER MAIL ORDER FIRM

**CONROY-LA POINTE**

Formerly **Computer Exchange**

See Ad Index

CALL

**NEED A PRINTER?**

MidWest Micro-Peripherals

1-800-423-8215



10mb 1/2 Height 245.  
20 mb Hi Speed 395.  
30mb Hi Speed 799.  
256K — 2.50

**4164K**  
**79¢**

**American Semiconductor**  
1-800-237-5758

**RAM** 64K QTY. \$ .49!  
256K EA. 2.47!  
CALL NOW! PROTO PC INC. (612)644-4660 PLEASE SEE AD INDEX

**FREE!** DISK DATA FILE WITH PURCHASE OF 50  
VERIFLEX DISKS. CALL 1-800-USA-FLEX

See ad index for our full page ad! USA-FLEX.

America's Mailorder Headquarters

**Lycor Computer**

World's Leader in Sales and Service

See Pages  
16 & 17

256K **D-RAM** High Quality 150ns Parts  
\$2.53 Microprocessors Unlimited  
Qty one 11/8/85 (918) 267-4961  
See Ad Index

**39¢ Diskettes**

Communications Electronics Inc.

See ad index for full page ad  
800-USA-DISK



# ATARI

## Applying The Atari

by Jeff Brenner

This month's column brings the second part of *Recipe Manager* -- just in time to organize your holiday recipes. The second part adds two useful features to the section listed last month. The first is a "FIND" option, which lets you search for a particular recipe or category. The other is the "CALCULATE" option, which automatically halves, doubles, triples, etc. the measures for any recipe. This month we also have several utility programs submitted by readers, and more reader mail.

### Clarifications/Corrections

I had the unusual opportunity to see last month's column in print before completing this month's article. I'll take advantage of this by correcting two confusing typographical errors that appeared here last month.

In November's column, a triangle symbol appears on page 180 and on page 184. In both these cases, this triangle should have been the less-than symbol. On both *Mailing List* and *Recipe Manager*, the greater-than symbol (same as INSERT key) moves forward among the entries, and the less-than symbol (same as the CLEAR key) moves backward. How did the triangles get there? I wish I knew.

On page 180, I seem to say that if you try to search for "Computer Shopper" the program cannot find "Computer Shopper." The first "Computer Shopper" should have been in all capital letters: If you try to search for something that is all capitals, the program will not find the same word that contains both capitals and lower case letters.

Also in November issue, I say that a keypad program correction was published in October. However, this program was left out of October's issue. November's keypad program is therefore the correction to the keypad program.

### Reader Mail

Q. First I'd like to say thank you for an extremely good section for Atari home computers. I'm writing to ask you a few questions: (1) Is the Atari 400 totally compatible with 800 and 800XL software? (2) Is the Atari 400 compatible with the 810 disk drive? The 1050 disk

drive? (3) Where may I obtain DOS 2.5? (4) Can I piggy-back eight 2K chips on the back of each 2K memory chip in my Atari 400 to expand its memory to 32K? Can the same process be used to expand the memory to 48K or 64K? (6) Could you provide me with a listing for a memory test program? Your answers will be greatly appreciated by my users' group.

Kuniki Lockett  
Sweetwater, AL

A. (1) The 400, provided it contains sufficient memory to run the programs, is completely compatible with 800 software. A 16K Atari 400, however, cannot run a 32K program for any machine. Software released specifically for the XL/XE machines cannot be used with the 400 and 800, but almost all Atari (8-bit) software will run on the 400/800 models.

(2) Again, provided the 400 contains at least 16K of memory, it can be used with the 810 or 1050 disk drives.

(3) As mentioned in last

month's column, you can send Atari your DOS 3 diskette and you will be sent DOS 2.5 at no charge (Atari Customer Relations, P.O. Box 61657, Sunnyvale, CA 94088).

(4) Unfortunately, expanding the 400's memory is not as simple as piggybacking RAM chips to the existing ones. You'll probably be better off buying an inexpensive Atari XL or XE than buying hard-to-find memory boards for the Atari 400.

(5) A memory test program is listed under "SIMPLE MEMORY TESTER." This BASIC program contains a machine language program that checks all memory above page 6 (location 1536). Each location is checked by setting all bits to zero (storing a zero in the location) and then setting all bits to one (storing a 255 in the location). At both points, the program verifies that the location contains the zero or the 255. If the memory location does not contain the value that was stored in it, the

program will end and will print the faulty memory address.

Q. I have played around

with the Atari 130XE and DOS 2.5. I tried to use the DOS in

Continued on page 66

### SIMPLE MEMORY TESTER

```
VTJ 10 REM SIMPLE MEMORY TESTER
IIJ 20 REM COPYRIGHT 1985 JB
ICJ 30 FOR I=1536 TO 1595:READ N:T=T+I+N
TKJ 40 POKE I,N:NEXT I
OQJ 50 IF T=10 THEN 70
WHJ 60 PRINT "ERROR-CHECK DATA LINES 100-170"
ROJ 70 PRINT CHR$(125);"CHECKING MEMORY..."
FSJ 80 POKE 207,0:A=USR(1536)
CKJ 90 IF PEEK(207) THEN 110
PSJ 100 PRINT "MEMORY O.K.":END
QXJ 110 BAD=PEEK(205)*256+PEEK(204)
YTJ 120 POKE BAD,PEEK(206)
OQJ 130 PRINT "BAD BYTE AT LOCATION ";BAD
FQJ 140 END
UXJ 150 DATA 104,169,168,141,1,210,169,7
UFJ 160 DATA 133,205,169,0,133,204,160,0
YQJ 170 DATA 177,204,133,206,169,0,145,204
CFJ 180 DATA 177,204,208,29,169,255,145,204
BWJ 190 DATA 177,204,201,255,208,19,165,206
CXJ 200 DATA 145,204,200,208,227,230,205,165
YCJ 210 DATA 205,141,0,210,197,106,208,216
UGZ 220 DATA 96,230,207,96
```

Program continued on next page

## Atari Help

by Jeff Brenner

Q. When using my Atari 1200XL with a monitor, the image is very unclear. There is ghosting to the left of the characters. This double image makes it quite impossible to use comfortably. I have tried several different types of monitors, amber, green, color (an interesting note: with the color monitor, it looked like the convergence was badly off). In all cases, the monitors worked well on other computers (not Atari). Can you shed some light on this?

Robert Davis  
Yorba Linda, CA

A. What is unusual about your problem is that you have tried other computers with your monitor and have been able to get a good picture. I assume you are using the proper cable (and of good quality) between the 1200XL's monitor jack and your monitor, that you have tried adjusting all controls on your monitor, and that you are not

using an 80-column board.

Have you tried using an ordinary color or black and white television set? See if you still get the double image.

Is the image unclear when you are using BASIC, or only when you are using a particular program, such as your word processor? If this only happens with a particular program, it is probable that the colors used for the text and the background do not blend smoothly and are causing this ghosting.

Although a hardware problem is least likely, you can see if this is the case by trying another Atari with your monitor. It does not have to be another 1200XL; a 600XL, 800XL or even an XE should give you the same result. If you get a clear picture with another Atari computer, this would indicate that your 1200XL does indeed have some type of hardware problem.

Q. I read your column (Applying The Atari) for the first time this week and would like

to compliment you on its content and style.

I couldn't resist an ad for an Atari word-processing set, comprising 800XL, 1027, 1050 and a monitor. Later, I bought an 850 interface from a member of the local SIG.

My problem centers around using the extraordinary 1027 printer. It seems to have been made to the same philosophy as the Model A Ford. I don't know if it will last as long.

There must be thousands of 1027s around the country. Do they all have such miserable documentation as I received with mine? The problem seems to be that all the textbooks on the Atari were printed before this printer was put on the market.

You would do me a huge service by telling me where I can find all there is to know about operating and looking after the 1027; particularly when connected to Atariwriter software.

How does it work? It spins so fast I haven't yet fathomed it! Where precisely does one

put the oil? Assuming one won't be able to buy spare ink cartridges forever, how does one revive them? Can one print special letters from Atariwriter without using the cumbersome Control-O sequence?

One of these days I want to try to use the 800XL as a robot controller, specifically to input analog voltages relative to its coordinates via the paddle ports, and output instructions through the RS232 interface. Has anything been published on this yet?

I do hope it's not imposing on you to ask all these questions. Even members of my SIG can't help — they are mainly interested in games or chatting on bulletin boards!

A. While books have been written on Atari computers, BASIC and even DOS, I don't know if there's any supplemental documentation available for Atari's printers. Occa-

Continued on page 163







## Applying The Atari Continued from page 160

directly from the computer to the printer without having to first LIST the programs to disk.

Richard Fleagle, of Fairbanks, Alaska, sends a renumbering utility (listed under the "RENUMBERING UTILITY" heading) and writes: "I am a subscriber to the *Computer Shopper* and I read the Atari section in each issue. I wonder what has happened to all of the old utility programs that were so plentiful so many years ago. I guess it was in January of 1981. I am enclosing a utility I have used for years. As with all of the renumbering utilities I have used, this one is no exception as it will not renumber lines referred to by variables.

"To load the utility, have the program you wish to renumber in computer memory and type EN."D:RENUMBER.LST." To run it, type G.32100.

"The program asks you for the file name you wish to have for the finished product. It may be a good idea to use the original program name with

the extender of ".LST" since the renumbered program is saved in a LIST format. Next question is the starting line number and what line number increment you want. Maybe you want to start at line 10 and have the next line 20, etc. Just answer 10,10 at that prompt.

"The program keeps you posted as to what is happening as it goes along and plays a bit of music. If there are lines that refer to variable names or lines that are not in the program being renumbered, the line number and a message [SR-Symbolic reference or NF-not found] will appear on the screen. Write these line numbers down since you will want to go back to them and enter the correct line numbers manually. When renumbering is complete, the screen will show how many lines were renumbered. Pressing RETURN will LIST the program to disk. Then type NEW and ENTER your new renumbered program. If there were error - reference lines, check these out and make corrections. When all is done, SAVE the file.

Aaron Todd of Los Angeles, CA, submits "EDITING

UTILITY." This program should be LISTED to diskette. Then it can be ENTERED and merged with your BASIC programs. Type GOTO 31000 to run it. You'll be asked to "INCREMENT BY HOW MANY LINES?" If your program is generally numbered by ten (i.e. 10, 20, 30, etc.) enter 10 for this prompt. Then, pressing START will list the next line(s) of your BASIC program. Pressing SELECT will list the previous line(s). To edit a line on the screen, press BREAK and use the control keys to re-enter. Then type CONT and press RETURN. When you are finished using this utility, press OPTION and it will erase itself from memory, leaving you with your BASIC program.

Thanks to all readers who have submitted programs.

## Genealogy Programs And More Genealogy Programs.

Last month I mentioned two genealogy programs that readers had written in about in response to Darwin K. Garrison's request for a genealogical program for the Atari. This month *Computer Shopper* readers have discovered even more. Antic Publishing, which claims that its genealogy program, *The Family Tree*, is "the only genealogy program for the Atari" had better take note:

- 1) Ancestors for the 800/XL/XE. \$39.95 plus a formatted DOS 2 diskette from Velma Prochter (Box 2434, Harbor, OR 97415).
- 2) Branches and Twigs for the 400/600/800/XL/XE, (companion programs). \$55.00 from Sysco Software (3595 Cloverleaf Drive, Boulder, CO 80302).
- 3) Family History. \$59.95 plus \$2.00 shipping from Direct Lines Software (4816 Forrester

St., Fair Oaks, CA 95628).  
4) Genealogical Database Manager and Family Tree Organizer for the 800/XL/XE, (soon for 520ST). \$29.95 from Caledonia Enterprises (490A Abelia Street, Sumter, SC 29152-1403).

The following were listed last month:

- 5) The Family Tree. \$19.95 plus \$3.00 shipping from Antic Publishing (524 Second St., San Francisco, CA 94107)
- 6) Genealogical Program from A-BUG-BYTE users group. \$5.00 from A-BUG-BYTE (10790 W. National Road, Brookville, OH 45309).

Now we have enough genealogy programs to last us for, well, generations! Several readers found these programs described in genealogy publications; others contacted organizations such as the National Genealogical Society. My sincerest thanks to all readers and genealogists who wrote, including Jim Cox, (APO New York), Al Crespo (Bakersfield, California), Y. Feiner (Orange, New Jersey), Louis J. Goldman (Middleburg Heights, Ohio), James M. Herzberg (Toledo, Ohio), John P. Kirkpatrick (Sumter, South Carolina), Leo H. Kordsmeier, Jr. (Little Rock, Arkansas), Dixie Sandy (Lafayette, Colorado), and Dan Sweda (Brookville, Ohio).

In October, a letter from Ken Rogers (Melrose, Massachusetts) was printed in which he asked where he could find the "Power Stick," a joystick that was made by a company called Amiga. My thanks to Patrick Campbell (Birmingham, Alabama) for writing to say that he recently purchased the Amiga "Power Stick" at a Birmingham Toys 'R Us store. I have seen the "Power Stick" in Toys 'R Us

stores in the New York area, and there is a good chance that other Toys 'R Us stores around the country are selling this joystick.

## Recipe Manager, Part II

Use Program Perfect to type in the Part II of Recipe Manager listed under the "Recipe Manager Additions" heading. Then LIST these additions to diskette (i.e. LIST "D:TEMP"), load in the original Recipe Manager, and ENTER the additions (ENTER "D:TEMP") to merge them with the original program. You can then SAVE the complete program under one name (i.e. SAVE "D:RECIPE.BAS").

The additions add the routines necessary for the FIND and the CALCULATE options. A description of each of these options follows:

## FIND Recipes/Categories

This option lets you find a particular recipe that you've stored in Recipe Manager. It also enables you to look through recipes in a specific category only, such as "main dishes."

When F is pressed for the "SELECT:" prompt, you are asked, "FIND CATEGORY OR RECIPE?" If you have the name of a particular recipe in mind, press R, and you'll be asked to enter the name of the recipe. When you type the name and press RETURN, the program will look through each recipe stored on the diskette until a match is found. If you are not sure of the entire name of the recipe, you can enter only a part of the name and the program will find all receipt names that match that part. For example, if you only type "CHICKEN," Recipe Manager would find any entrees beginning with "CHICKEN," such as "CHICKEN A LA KING" and "CHICKEN CACCIATORE."

When a match is found, the recipe is displayed on the screen and you are asked if you want to "CONTINUE SEARCHING OR STOP." Press C to continue finding recipe names that match the one you entered, or press S to return to the menu screen. From the menu screen, you can then print the recipe, or use the CALCULATE feature (discussed later.)

If you choose to find a category, rather than a particular recipe, type in the name of the category you want to look through. Again, you can only enter a part of the category if you are unsure of

### EDITING UTILITY

```

BYJ 31000 REM SPECIAL EDIT PROGRAM/A. TODD
DOJ 31010 PRINT "TO ADVANCE, PRESS START"
TRJ 31020 PRINT "TO BACK UP, PRESS SELECT."
WQJ 31030 PRINT "PRESS BREAK FOR EDIT MODE."
HJ 31040 PRINT "TYPE 'CONT' AND PRESS RETURN WHEN YOU HAVE FINISHED EDITING."
YUJ 31050 PRINT "WHEN THROUGH, PRESS OPTION TO ERASE"
PJ 31060 PRINT "THIS PROGRAM."
HJ 31070 PRINT "INCREMENT BY HOW MANY LINES?";:INPUT LIN
CJ 31080 FOR LST=9 TO 31740 STEP LIN
UJ 31090 IF LST=1 THEN LIST LST+1,LST+LIN
IJ 31100 IF PEEK(53279)=4 THEN GOTO 31140
RJ 31110 IF PEEK(53279)=5 THEN LST=LST-LIN;GOTO 31090
IJ 31120 IF PEEK(53279)=3 THEN GOTO 31150
IJ 31130 GOTO 31100
HJ 31140 NEXT LST;GOTO 31090
WJ 31150 PRINT CHR$(125);:POSITION 2,4
WJ 31160 FOR Y=31000 TO 31170 STEP 10:PRINT Y;NEXT Y:PRINT "GR.0:POKE 842,12"
FJ 31170 POSITION 2,0:POKE 842,13:END
  
```

### RECIPE MANAGER ADDITIONS

```

UTJ 1730 PRINT CHR$(125);:GOSUB 1100
FLJ 1740 GOTO 2150
BJ 1750 GOSUB 1100:TRAP 1330
UJ 1760 POSITION 2,23:PRINT DE$;
WJ 1770 POSITI 2,22:PRINT DE$;"CURRENT NUMBER OF SERVINGS";
WJ 1780 INPUT C$;
UJ 1790 POSITION 2,22:PRINT DE$;"NUMBER OF SERVINGS DESIRED";
WJ 1800 INPUT SD;
CJ 1810 F=SD/CN;
CJ 1820 FOR Y=4 TO 21:POSITION 2,Y:INPUT B4;A$;
PAE 1825 IF LEN(A$)=0 THEN NEXT Y;GOTO 1300
WJ 1830 IF A$(1,1)<>" " THEN NEXT Y;GOTO 2000
WJ 1840 A$=A$(2,LEN(A$));
WJ 1850 FOR X=2 TO LEN(A$):IF A$(X,X)<>" " THEN NEXT X;GOTO 1800
IJ 1860 A$=A$(1,X-1);
FJ 1870 GOTO 1800
AJ 1880 POSITION 2,Y:PRINT "S";:POSITION 2,23:GOTO 2130
IJ 1890 J=LEN(A$)+1;DN=1;NM=0
CJ 1900 FOR I=LEN(A$) TO 1 STEP -1:IF A$(I,1)<>" " THEN NEXT I;I=2;GOTO 1940
WJ 1910 DN=VAL(A$(I+1,LEN(A$)));
JME 1920 FOR J=1 TO 1 STEP -1
DIE 1925 IF A$(J,J)="" AND A$(J,J)="" THEN NEXT J;J=VAL(A$)
WJ 1930 NM=VAL(A$(J+1,1-1));
WJ 1940 M=0:IF J>1 THEN M=VAL(A$(1,J-1))+NM/DN
WJ 1950 IF J<1 THEN M=NM/DN
WJ 1960 M=M*F;LN=LEN(A$)
WJ 1970 IF INT(M)=0 THEN A$="":FR=M*M;GOTO 1990
UJ 1980 A$=STR$(INT(M));FR=M-INT(M);M=M-FR
UJ 1990 R=FR/DN+1;NM=0
WJ 2000 FOR D=2 TO 5:IF D=5 THEN D=8
WJ 2010 FOR N=1 TO D
AVJ 2020 IF ABS(FR-(N/D))<R THEN R=ABS(FR-(N/D));DN=D;NM=N
TJ 2030 NEXT N;NEXT D
WJ 2040 IF DN=NM THEN NM=0;M=M+1
WJ 2050 IF M THEN A$=STR$(M);IF NM=0 THEN 2090
WJ 2060 IF M THEN A$(LEN(A$)+1)=""
WJ 2070 A$(LEN(A$)+1)=STR$(NM);A$(LEN(A$)+1)=""
WJ 2080 A$(LEN(A$)+1)=STR$(DN)
HJ 2090 POSITION 3,Y:J=LEN(A$)-LN:BOUND 1,25,10,0
YJ 2100 IF J>0 THEN FOR I=1 TO J:PRINT CHR$(255);:NEXT I
CJ 2110 IF J<0 THEN FOR I=J+2 TO 1:PRINT CHR$(254);:NEXT I
WJ 2120 PRINT A$;:BOUND 1,0,0,0
WJ 2130 NEXT Y
FJ 2140 GOTO 1330
WJ 2150 POKE 752,0:POSITION 2,22
YJ 2160 PRINT DE$;"FIND";:CHR$(195);"CATEGORY OR";:CHR$(210);"RECIPE?";
PJ 2170 GET B1;A1:IF A1<0 AND A1<67 THEN 1330
WJ 2180 PRINT CHR$(A1);
WJ 2190 IF A1=67 THEN POSITION 2,22:PRINT DE$;"FIND WHAT CATEGORY";
WJ 2200 IF A1=62 THEN POSITION 2,22:PRINT DE$;"FIND WHAT RECIPE NAME";
  
```

### RENUMBERING UTILITY

```

YJ 32350 REM RENUMBER PROGRAM/DICK FLEAGLE
WJ 32360 DIM B$(12);:PRINT CHR$(125);:TB=254;I=1;Z=32350
EJ 32370 NM=0;X=PEEK(130)+PEEK(139)+8TB
HJ 32380 Y=PEEK(134)+PEEK(135)+8TB+8*(PEEK(X+5)-120)+2
PJ 32390 PRINT "ENTER FILENAME FOR PROGRAM:";:PRINT "(NAME AND EXTENSION ONLY)";
IJJ 32400 INPUT B$;:PRINT "START 0, BY (INCREMENT)";:INPUT FR;BY:PRINT CHR$(125);
OJ 32410 B=PEEK(134)+PEEK(137)+8TB;X=B+M-FR
AJ 32420 LN=PEEK(X)+PEEK(X+1)+8TB;BOUND 0,LN,10,0:IF LN=2 THEN 32460
FJ 32430 PL=PEEK(X+2);C=X+3
WJ 32440 LL=PEEK(C);C=C+1;GOSUB 32500:IF LL<PL THEN C=X+LL;GOTO 32440
VJ 32450 X=X+PL;M=M+BY;GOTO 32420
CJ 32460 M=FR;X=B;BOUND 1,0,0,0
HJ 32470 LN=PEEK(X)+PEEK(X+1)+8TB;BOUND 0,32768-LN,10,0:IF LN=2 THEN 32740
WJ 32480 M=INT(M/TB);M=M-M*TB;POKE X,PL;POKE X+1,MH
WJ 32490 M=M+BY;X=X+PEEK(X+2);GOTO 32470
LJ 32500 TK=PEEK(C)
AJ 32510 IF (TK>9 AND TK<14) OR TK=35 THEN C=C+1;GOSUB 32640:RETURN
WJ 32520 IF TK<36 THEN 32500
WJ 32530 C=C+1;D=PEEK(C);IF D=23 OR D=24 THEN 32560
CJ 32540 IF D=14 THEN C=C+6
LJ 32550 GOTO 32530
OJ 32560 C=C+1;GOSUB 32640:D=PEEK(C);IF D<20 AND D<22 THEN 32560
EJ 32570 RETURN
WJ 32580 IF TK<7 THEN RETURN
OJ 32590 C=C+1;D=PEEK(C);IF D=27 THEN 32620
CJ 32600 IF D=14 THEN C=C+6
OJ 32610 GOTO 32590
CJ 32620 C=C+1;IF C<(X+LL) THEN GOSUB 32640
WJ 32630 RETURN
HJ 32640 D=PEEK(C);IF D=20 OR D=22 THEN C=C+1;RETURN
OJ 32650 IF D<14 THEN PRINT M$;:SR="";C=C+1;RETURN
HJ 32660 C=C+1;FOR J=0 TO 3:POKE Y+J,PEEK(C+J);NEXT J
AJ 32670 IF M&LN THEN M=B+RN-FR;GOTO 32690
HJ 32680 M=X;RN=M
LJ 32690 NM=PEEK(MX)+PEEK(MX+1)+8TB;BOUND 1,MN,10,0
LJ 32700 IF MN<2 AND MN<M THEN RN=RN+BY;MX=M+PEEK(MX+2);GOTO 32690
WJ 32710 IF MN<M THEN PRINT M$;:NF="";GOTO 32730
WJ 32720 M=RN;FOR J=0 TO 3:POKE Y+J,PEEK(Y+J);NEXT J
HJ 32730 C=C+6;RETURN
WJ 32740 PRINT "POKE 85,10:PRINT ">";(M-FR)/BY";:LINES"
HJ 32750 PRINT "LIST";:CHR$(34);"D";:B$;CHR$(34);":",:IFR$;":",:M-BY
WJ 32760 FOR K=1 TO 3:PRINT CHR$(120);:NEXT K;POKE 744,0:END
  
```

## Atari Help

Continued from page 65

sionally, updates to documentation are released by Atari, so you may want to write and ask if more information is available for the 1027 (Atari Customer Relations, P.O. Box 61657, Sunnyvale, CA 94088). How the 1027 works? Basically, an electric current spins a band of characters to the proper letter or number which is then "stamped" onto the ink ribbon, leaving an impression on the paper. Compared to a typewriter, the 1027 seems amazingly fast, but you may be surprised to hear that it is actually one of the slowest printers. Dot-matrix printers, while offering lower-quality type, can churn out characters six to eight times faster than letter quality printers. The slower, letter-quality printers have an advantage, of course, in that their print is indistinguishable from that of a typewriter.

Unless your manual specifically tells you to oil the 1027, do not oil it. Most of today's printers are designed to run without user-oiling, and by oiling it you may do more harm than good.

Cartridges are more difficult to "revive" than are ribbons, but it is possible. One common method for extending the life of a cartridge is to take a part of the ribbon, twist it so the back of the ribbon faces the front, (180 degrees), and then completely wind the ribbon to the end. Some cartridge users open up the cartridge, apply a solvent, and then wind everything back up again when dry, but others say there may be undesirable "side-effects" to this technique.

Regardless of your printer, the Control-O sequence is necessary to send special character codes to the printer.

A good article to read on controlling external devices with the Atari computers is "Control Your Environment with the Atari 400/800" by David Alan Hayes (BYTE Magazine, July 1983, p.428). It discusses using the joystick ports for input/output. While written for the Atari 400 and 800, most of what is discussed pertains to the XL and XE computers as well. Remember, however, that the XL and XE have only two joystick ports instead of four.

Q. Do you have any advice on a modem that would be compatible with Atari XE, Franklin, Commodore and T.I.? I would like to be one modem and use individual cables.

Stan Morris  
Kula, HI

A. Your best bet is to buy any of the RS232C-compatible

modems and use the appropriate cables/interfaces for each computer. You'll need to buy an Atari 850 interface to use such as a modem with the Atari XE.

Q. Thanks for all the nice articles on ATARI along with the great utility programs. They are proving very helpful in my computing! I have a ton of questions for you: 1) I have some customized business software packages written in BASIC which I would like to use the numeric keypad for entries. Is there a particular technique to inserting your

keypad program as a subroutine? 2) I would like to compile this business software into machine language. Is there a program like MAC65 or some other which could do the job? Or should I use something like the ACTION language to speed up the process?

John Palhof

West Palm Beach, FL

A. Adding the keypad subroutine to a BASIC program is easily done. First, renumber the keypad program (with a renumbering utility or manually) so that the line numbers do not interfere with

the line numbers of your business program. Next, you must change the program into a subroutine. This is done by changing the END on line 50 to a RETURN. LIST "C:" (for cassette) or LIST "D:TEMP" (for diskette) the renumbered keypad program. LOAD in your business software and ENTER "C:" or ENTER "D:TEMP" the keypad program. By ENTERing the LISTed keypad program, it is merged with your business program in memory. Now, to activate the keypad, place a GOSUB to the keypad

subroutine at the beginning of your business program. For example, if you renumbered the keypad program to begin at line 20000, line 5 of your business program could read:

5 GOSUB 20000

After the keypad routine is initialized, control returns to your BASIC program and the numeric keypad responds to your input.

Regarding your question on

Continued on  
page 166

# ARK ELECTRONIC ENT. of Toledo



## SEVILLE-XTURBO

80% performance of the AT  
at 1/3 the cost!

All the regular features of the Seville-XT that runs all IBM Software ■ Five I/O Slots ■ 8088 16-Bit Microprocessor ■ Accepts 8087 Math Co-Processor, opt. ■ Built-in Serial & Parallel Ports plus Floppy Disk Controller ■ Uses same Keyboard & Power Cables as IBM ■ Parts List & Schematics included.

**New Features...** can run at 7.37 MHz compared to the IBM standard 4.77 (selectable) ■ has 64K RAM, expandable to 512K on board ■ BIOS includes internal Park Software.

**Plus...** can be ordered with the optional Custom Microprocessor to increase speed even more. Using Norton Utilities, Sys Info shows speed to 2.8 ratio versus the 1.0 ratio of the IBM at 4.77 MHz. Fully code compatible with the 80286. **Only \$79.95 additional.**

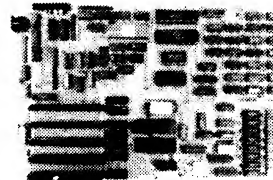
**And more...** complete Diagnostics Package, both software & hardware that plugs directly into the RS232 port to check out ALL your hardware. Even features more than the IBM Advanced Diagnostics retailing at \$195. **Our price, only \$29.95.**

Bare Board w/BIOS \$149.95

Soldering Kit \$49.95

Parts Kit \$149.90

Board, populated w/64K and  
1-year warranty \$449.00



## SUPER X/T™

New 640K Super  
Board functions the  
same as IBM-XT!

- Eight I/O Slots
- Intel 8088 Microprocessor
- Accepts 8087 Math Co-Processor, opt.
- 256K RAM, expandable to 640K
- Expandable ROM to 112K
- Will run with IBM-XT ROM Set
- Uses same Keyboard & Power Cables as IBM
- Runs All IBM Software
- Documentation & Schematics Included

Board, fully populated w/BIOS \$249.00

## SYSTEM KITS -

Includes Motherboard with 256K RAM installed, (1) Half Height Disk Drive - DS/DD, 130 WATT Power Supply, Video Card, Standard Keyboard, PC/XT Case, Floppy Drive Cable, and Speaker. All ready to assemble.

Super X/T™ (w/Controller Card) ... \$729.00

Seville-XTurbo ... \$919.00

(Custom configured systems are available. Please call.)

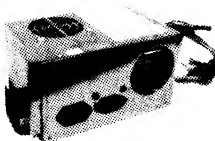
\* VISA \* MASTERCARD \* AMERICAN EXPRESS \* WELCOME \*

## POWER SUPPLIES

### 130 WATT Side or Rear Mount

- Will Power Hard Drive
- 4 Disk Drive Power Cables
- Over twice IBM-PC Output

\$99.95

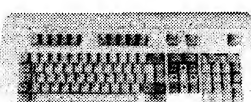


### 100 WATT Rear Mount

- 2 Disk Drive Power Cables
- Over IBM-XT Output

\$89.95

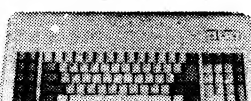
## KEYBOARDS



KB-5151

\$119.95

- Keytronic Equivalent
- Separate Cursor/Numeric Keypads
- Illuminated Caps & Num Lock
- Fully IBM Compatible



Maxi-Switch

\$109.95

- Illuminated Caps, Num & Scroll Lock
- Oversize Shift & Return Keys
- Fully IBM Compatible

Std. "IBM-Style" Keyboard ..... \$89.95

## DRIVES



Omek

OM55

- Built-in exercise & self-test modes
- Low power requirements (4.9 watts)
- Remarkably quiet operation
- AT compatible
- 1-year warranty

\$139.95

QumeTrak

142"

- Half Height
- DS/DD

\$79.95

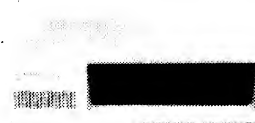
Sanyo

FDA-5200B/PC

- Half Height
- DS/DD
- Mounting Brackets

\$89.95

## PC/XT CASE



\$69.95

- Accepts PC-type Motherboards
- Includes Hardware for 2-4 Drives
- Accepts Side-Mount Power Supply
- PC-type Expansion Opening
- Hinged Top Lid

## MONITORS

SWL HI-RES

\$109.95

- 12" Green Screen
- 720 x 352 Resolution
- Graphics Capability, TTL Input
- Cables directly to Power Supply

TAXAN RGB VISION III

\$299.95

Super Hi-Res RGB Monitor

- 12" Screen
- 640 x 262 Pixels
- 18 MHz Bandwidth
- As manufactured for Acorn Computer.
- RGB cable for IBM ..... \$16.95

**TERMS** - Prices are subject to change without notice. We are not responsible for typographical errors. We reserve the right to limit quantities & to substitute manufactures. All merchandise subject to prior sale.

Shipping & Handling Additional

## NEW MICROPROCESSOR

NEC V20 μPD70108

Replaces 8088 to speed up IBM-PC 10 to 40%. Pin compatible with the 8088 ..... \$20.95

## BOARDS

(Assembled & Tested)

Color Graphics ..... \$109.95  
Disc Controller (4 Drives) ..... \$79.95  
Multifunction ... \$139.95 to \$259.95

## RAM

4164 200ns ..... 59¢ ea.  
41256 200ns ..... \$3.09 ea.

Inquiries & Service  
(419) 476-6972

\* Happy Holidays \*  
734 Phillips Avenue • Toledo, Ohio 43612

Order Department  
1-800-426-4275

In Ohio call collect  
(419) 476-6727

ARK ELECTRONICS IS AN AUTHORIZED DISTRIBUTOR FOR JDR MICRODEVICES



### ATARI HARDWARE / SOFTWARE

810 Disk Drives	\$265	(7)
810 Disk Drive Kits	\$240	(7)
810 Happy Enhancement	\$185	(4)
1050 Happy Enhancement	\$185	(4)
810 Analog Upgrade Kit	\$ 37	(3)
850 Interface Module	\$125	(7)
Atari 800 Computer Kits		
48K Electronics	\$100	(7)
Atari 400 Computer Kit	\$ 47	(5)
800 OS 10K ROM 'B' Board	\$ 17	(2)
CPU 'GTIA' Board	\$ 18	(2)
16K Memory Board	\$ 19	(2)
400/800/810/850 Power Adapter	\$ 15	(3)
I/O Data Cable, 6'	\$ 12	(2)
13 pin I/O Plug Kit (cable end)	\$ 3	(1)
13 pin I/O Jack (Port)	\$ 3	(1)
Atari Joystick (standard)	\$ 5	(2)
Atari Paddles (set)	\$ 8	(2)
All types of other boards and parts are available! Call now!!		
Atari Microsoft Basic II		
Cartridge w/manual	\$ 27	(3)
Atari Pilot, Cart. w/manual	\$ 22	(3)
Atari Basic Cartridge Kit	\$ 15	(3)
Atari Assembler/Editor Cart. Kit	\$ 15	(3)

### TEXAS INSTRUMENTS T199/4 HARDWARE

T199 Replacement Keyboard	\$ 7	(3)
T199 Power Supply Board	\$ 7	(2)
T199 Power Adapter	\$12	(3)
T199 Video Modulator Unit	\$12	(3)
T199 Integrated Circuit Chips		
TMS 9900 — \$13 (1)	TMS 9901 — \$ 5 (1)	
TMS 9904 — \$ 5 (1)	TMS 9918 — \$ 9 (1)	
Complete set of all four: \$27 (3)		

### TIMEX/SINCLAIR TS-1000 CASSETTES

Statistics, Algebra 1, Geometry 1, Money	
Analyzer 1, Mixed Game Bag 2, Pwr. Pack 1 — \$ 3 (1) each	
Stock Analyzer, College Cost Analyzer, IRA Planner, Home Improvement Planner, Checkbook Manager, Coupon Manager, The Organizer — \$ 4 (1) each	

### MORE TITLES AVAILABLE/CALL NOW!

SPECIAL CLOSE-OUT: PRINTER, TIMEX TS-1000 16-Column Printer, uses plain paper... NO INTERFACE REQUIRED. MADE IN U.S.A. — \$25 (4) Limited Quantities

### CALL OR WRITE FOR FREE CATALOG!!!

Ordering Information: All boards listed are complete with all parts and are fully guaranteed. UPS shipping charges are shown in brackets next to the price. Shipping charges must be included with all orders. Orders may be placed by phone using your VISA or MasterCard, or you may mail your order in with a check or money order. Hurry, some supplies are limited.

**CENTURIAN ENTERPRISES (805) 544-6616**  
**Post Office Box 3233, San Luis Obispo, CA 93403-3233**  
 Sales Office: 890 Monterey Street, Suite B, SLO, CA 93401

★ APPLE ★ COMPAQ ★ AST ★

★ KODAK ★ MAXELL ★ EPSON ★ OKIDATA ★ MICRO SOFT ★

## FUTURE BYTE

### A COMPUTER DISCOUNT STORE

FOR FURTHER INFORMATION CALL  
**(213) 208-0259 — (818) 906-1984**

#### COMPUTERS

IBM PC 256K, 2DR	\$1599
IBM XT, No hard disk	\$1879
IBM AT, 20MB, 512K, SP\$4750	
Compaq Desk Pro I	\$1799
All Kaypros	CALL

#### MONITORS

Taxan 440 Color	\$559
Taxan 12" IBM Amber	\$136
Taxan 12" IBM Green	\$128
Taxan 220, Video	\$262
Amdek	ALL PRODUCTS
Princeton	ALL PRODUCTS

#### PRINTERS

Dynex DX-15XL/Brother	\$365
Okidata 92P	\$355
Citizen MSP 10	\$319
Citizen MSP 15	\$495
Silver Reed 550	\$400
Abati (Demo)	\$339
Toshiba 1340	\$665
Epson	ALL PRODUCTS

#### MODEMS

Hayes 1200	\$379
Hayes 1200B	\$369
Maxell 1200	\$249

#### SPECIALS

PC Paint w/brush	\$140
Sidekick	\$34
Kodak DSDD	\$18.75

#### HARD DISK/TAPE BACK UP

IBM 10 Meg	\$1400
Rodime 10MB w/Controller for AT	\$619
Rodime -R0202E- 21.7 Meg for-	

#### SOFTWARE

MSS Word	\$219
Multimate	\$245
R-Base 4000	\$225
R-Base Clout	\$129
Peachtree Bck-Basics	\$239
Microsoft Basic Cmplr	\$259
Turbo Pascal	\$39
T. Pascal w/support	\$66
3 Pak	\$65
Word Plus	\$439
Adv. DB Master	\$375

#### MULTI FUNCTION CARDS

Ast 6 Pak 64K	\$248
Ast 6 Pak 384K	\$310
Ast Preview	\$269
Ast Advantage	\$379
AT-Partner	\$299
Ast 6 Pak Compatible	\$139
Hercules Compatible	\$144
Quadran OK	\$225
Generic copy	\$179

#### VIDEO BOARDS

Hercules Mono	\$289
Hercules Color	\$165
Generic Mono or Color	\$129
Taxan Mono Card	\$149
Persyst Bob Board	\$345
Taxan 555 for Ultra	
Hi-Resolution	\$270
Sigma 440	\$495

### ALL PRICES ARE NEGOTIABLE

★ HERCULES ★ HAYES ★ BIZ COMP ★

### Applying The Atari

Continued from page 162

the complete name. After a match is found, it is displayed on the screen and you are asked if you want to continue searching or to stop. Press C to find the next recipe in the category you specified. When you've found the recipe you want, press S and the menu will appear.

When finding either a recipe name or a category name, an "END OF RECIPES" message will be displayed when all recipes on the diskette have been examined for a match.

If you want to change a recipe that you have found, press S to stop searching and press B on the menu for the BROWSE/EDIT option. The last recipe that was found will be reprinted on the screen for you to change it as you please.

### CALCULATE Feature

This option enables you to automatically multiply or divide the measurements of a particular recipe. Only the recipe that is on the screen is affected by this command -- the original recipe on the diskette will not be changed.

When C is pressed for the "SELECT:" prompt, you are asked, "CURRENT NUMBER OF SERVINGS?" Type the number of servings that the original recipe makes and press RETURN. It is a good idea to label the recipe itself with the number of servings. The best way to do this is by placing the number of servings in parenthesis on a line, such as:

(4) SERVINGS.

This will enable the "4" to be changed along with the measurements when a recipe is multiplied or divided.

Next you are asked, "NUMBER OF SERVINGS DESIRED?" Type the number of servings you would like to make and press RETURN. Recipe Manager will then examine the recipe on the screen, line by line, multiplying or dividing each measurement as appropriate. Remember, in order for a measurement to be re-calculated, it must be in parenthesis and at the left-most position on the screen. An asterisk will be printed on any line that generates an error when the CALCULATE option is used. Such an error might result if a closed-parenthesis is forgotten or if numbers are not in the correct format.

The CALCULATE feature will put mixed numbers in a form such as: 1 + 1/4. Recipe Manager uses 1/8 as the smallest fraction and will round measurements up or down to the nearest 1/8. If you would like the minimum measurement to be 1/4, change line 2000 to:

2000 FOR D = 2 TO 4

It is important to note that only the measurements will be changed -- baking times, for instance, must be lengthened or shortened by you, since these times cannot simply be multiplied or divided along with the measurements of the recipe.

### Sample Recipe

Figure 1 shows a sample Recipe Manager screen on which a recipe (thanks to Sandra B.) has been placed. The first line of the mini-screen contains the category, "MAIN DISHES" and the second line contains the recipe name,

Figure 1

### "MEAT LOAF."

Note the format of the numbers for the measurements and the "(4) servings" near the bottom of the recipe.

Figure 2 shows how this recipe looks when printed with the PRINT option. The top recipe is the original one, while the bottom one was recalculated, with the CALCULATE option, for eight servings. Note how the categories are placed in the upper, left-hand corner and how the recipe names are automatically centered and underlined. This allows you to cut out the recipes and paste them on recipe cards, if desired.

### MAIN DISHES

#### MEAT LOAF

Ingredients:

(1 + 1/2) cups seasoned stuffing mix

(1/2) cup water

(1) can tomato sauce (8 oz. can)

(2) lbs ground beef

(1) egg

(1) packet onion soup mix

Directions:

Mix stuffing with water until moist. Stir in remaining ingredients. Form into a loaf in shallow baking pan. Bake 60 minutes at 350° F.

(4) servings

### MAIN DISHES

#### MEAT LOAF

Ingredients:

(3) cups seasoned stuffing mix

(1) cup water

(2) cans tomato sauce (8 oz. can)

(2) lbs ground beef

(2) eggs

(2) packet onion soup mix

Directions:

Mix stuffing with water until moist. Stir in remaining ingredients. Form into a loaf in shallow baking pan. Bake 60 minutes at 350° F.

(8) servings.

Figure 2

### Next Month

We'll have programs for the new year, reader mail, a look back to 1985, and more.

Readers' questions, comments and contributions are welcome. Please enclose a self-addressed, stamped envelope for a personal reply.

A diskette of all programs listed in this month's column is available from the author for \$7.00, postpaid. Please specify your disk drive model.

Program Perfect is a utility used to check for typing errors while entering programs from this column. Readers may send \$5.00 for a diskette of this program and documentation.

Address all correspondence to: Jeff Brenner, "Applying The Atari 12/85" c/o Computer Shopper, P.O. Box F, Titusville, FL 32781-9990.

## Atari Help

Continued from page 163

compiling your BASIC business programs into machine language, you would want a BASIC compiler, such as Monarch Data System's ABC. A compiler will take a program written in BASIC and convert it into machine language code so that it may run several times faster. MAC/65 is only an

assembler/editor and would require you to completely rewrite your programs into assembly language; a far from simple task, regardless of your programming experience. A language such as Action! would speed things up, but again you would have to rewrite the entire program in the new language.

Q. On the Mailing List program ("Applying The Atari,"

June 1984) how do I change the left margin on my Okidata 92? As you know, the tractor is fixed so you can't shift the position of the paper.

Mitchell J. Macieski  
Nutley, NJ

A. The lines listed under "Left-Hand Margin for Mailing List" will allow you to enter a value for the left

added as an enhancement to Mailing List. If you did not enter the enhancements to Mailing List, then do not type this line.

When you choose to print labels, you'll now be asked to enter a left margin. Enter the number of spaces that you want the print head to move over before it begins printing.

### LEFT-HAND MARGIN FOR MAILING LIST

```
1155 PRINT "LEFT MARGIN": INPUT LM
1266 A$=SP$(1,LM)
1285 PRINT #5;SP$(1,5+LM);ID2$;SP$(12);IF Q THEN PRINT #5;SP$(1,HS+5);ID$;
1290 PRINT #5;A$;NAME2$;IF Q THEN PRINT #5;SP$(1,HS);NAME$;NAME$=NUL$
1300 PRINT #5;L$;A$;ADDR2$;IF Q THEN PRINT #5;SP$(1,HS);ADDR$;NAME2$=NUL$
1310 PRINT #5;L$;A$;CS22$;IF Q THEN PRINT #5;SP$(1,HS);CS2$;
```

margin. This will work on any printer since it prints spaces to move the margin over. Lines 1155 and 1266 are added, while 1285, 1290, 1300 and 1310 are changed. Line 1285 is one of the new lines recently

Address Atari-related questions to:

Jeff Brenner  
"Atari Help"  
c/o COMPUTER SHOPPER  
P.O. Box F  
Titusville, FL 32781-9990



The I.C.E. BOX full function true In-Circuit-Emulation device.

Softaid's I.C.E. BOX will make you wonder why the others are called "TRUE" emulators.

The I.C.E. BOX is a small, compact unit, easy to move and use. Though it costs about the same as other handheld emulators, it is the only portable unit that offers true full speed emulation with hardware breakpoints. The I.C.E. BOX has 65,535 hardware breakpoints that can be set anywhere in memory — even in ROM! Optional ICEpack software supports full symbolic debugging, and includes ICEbasic — an automation package for production test and service. Plug I.C.E. BOX into your target system, connect a terminal or computer, and start debugging your hardware and software faster than you ever thought possible!

- Built-in RAM and ROM tests
- Breakpoints can be set in ROM or RAM
- Breakpoints and emulation run at full target system speed
- Binary or hex programs can be downloaded over RS-232
- Automatically profiles, finding the bottlenecks in your code
- Built-in Help function
- Assembles/disassembles code, traces execution, traces while skipping subroutines, compares and alters memory, I/O and registers.

The I.C.E. BOX is available from stock for \$600.00 each, for the Z80, 8085, and NSC800 processors. Please specify which I.C.E. BOX you need when ordering. To order contact Softaid, Inc., P.O. Box 2412, Columbia, MD 21045, (301) 792-8096. Shipping charge is \$5.00 per unit. We accept Visa, Mastercard, checks and COD.

## NATIONWIDE TOLL FREE RESPONSE CENTER

**GIVE YOUR COMPUTER PRODUCTS  
THE COMPETITIVE EDGE THEY DESERVE!  
YOUR OWN TOLL FREE 800 NUMBER  
INCLUDING A 24 HOUR, 7 DAY A WEEK  
RESPONSE CENTER TO RECEIVE YOUR CALLS.  
ALL FOR AS LITTLE AS \$65.00 A MONTH!**

**- MESSAGES - SALES LEADS - ORDERS -  
WE PROVIDE THE VITAL LINK  
BETWEEN YOU AND YOUR CUSTOMERS!**

**1-800-821-5226  
ACTION 800 TELESERVICES**

## 4XFORTH

Continued from page 66

the section on Satellite Disk. This is a scheme in 4XFORTH where a "processor may be run as a serial satellite from a computer which has disks." The information looks like one could develop a CRAY approach to multi-computer operation using this software. It's very intriguing.

A seventy page dictionary is next containing some four hundred words. The description of the words look good. There appears enough flexibility within this dictionary to do about anything one could wish to do in FORTH. Admittedly, it uses the "line A" for its minimum graphics but when the GEM Interface package arrives, the 4XFORTH system should prove an excellent tool for software development. The details of the description of each word was not always obvious, so I started dumping the source code. After 300 screens of information, I pulled the plug and began to study the detailed coding. This enhances the understanding of the explanation in the text. You can pick a word and follow it backwards up to the "primitive" using the LOCATE <word> tool. In studying the screens, I was quite pleased with the programmers' comments in support of the coding.

There are two things that I wish were available. First, a programming card containing the word, format, and brief explanation classed into functioning areas. It takes time sorting through the pages of text. You know it's there but you just cannot find it. One time I turned off my cursor and could not find out how to turn it back on. Now that slows one down. The other thing for help would be some completed, detailed examples from booting, through editing, graphics, installation and running. I know the information is in there and I'll eventually find it even though I'm not the best at absorbing written material.

Even though there are some shortcomings and some breakdown that necessitate rebooting, I like the 4XFORTH system. I'm anxious to receive the GEM Interface package so I can get into some serious program development. I see bugs, lock-ups, etc., in the system that may be either 4XFORTH or the 520ST, but I feel that both Atari and the Dragon Group have enough class that when problems are isolated, we'll be furnished the fixes. Again, I like the system, but will hold my final judgement until I get a chance to work with the GEM Interface software.

for PC jr.  
**DISK DRIVES  
WITH CONTROLLER**

**\$299**

**SAVE**

**ATR 8000  
WITH CP/M**

**\$350**

DISK DRIVES SS... \$99.95

**MS-DOS  
ADD  
\$550**

**ATARI  
CLOCK &  
CALENDAR**

**\$49.50**

**NEW**

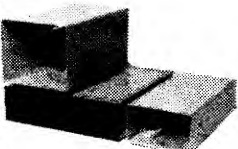
**ATARI ST  
POWER SUPPLIES  
HOUSING**

**\$99**

**5 1/4" DISK DRIVE CASES w/Power**

SINGLE 1/2 Ht Cases w/Power... \$44.95  
DUAL 1/2 Ht Cases w/Power... \$55.95  
HARD DISK Single w/Power... \$99.95  
SINGLE 1/2 Ht Case Only... \$19.95  
DUAL 1/2 Ht Case Only... \$29.95

**5 1/4" DISK DRIVE CASES W/POWER  
SUPPLIES**



- Cases accommodate all standard 5 1/4" drives
- New chip resistant finish
- Over current and over voltage protection
- Dealer inquiries invited
- Call or write for quantity discounts
- Guaranteed in writing for 120 days

SINGLE 8" SS DRIVE ATR READY ..... \$199  
DUAL 8" SS DRIVES ATR READY ..... \$349  
CO-POWER BOARD W/1MB RAM ..... CALL

FOR IBM & COMPATIBLES. INTERNAL MOUNT:

10 MB HARD DISK \$499 W/CONTROLLER  
20 MB HARD DISK \$549 W/CONTROLLER

**COMPUTERS** COLUMBIA... \$1200  
CORONA... CALL  
COMPURO  
2 HD 16MB EA CALL

**ACTRIX PORTABLE CP/M & MS-DOS  
Built-In Printer, 2 Modems ..... \$1895**

PRICES MAY BE LOWER AT TIME OF PUBLICATION  
TERMS: Personal checks allow 14 days, COD, MO.,  
Certified Checks... Credit Cards and 3.5%  
Shipping and handling: \$2.00 plus current UPS or  
Parcel Post rates.

**ORDERS ONLY 1-800-351-0295**

**IB COMPUTERS** 503-297-8425  
1519 S.W. Marlow, Portland, OR 97225

**PUT ALL CABLES &  
POWER SUPPLIES INTO  
ELEGANT BOX UNDER  
YOUR MONITOR.  
CENTRAL SWITCH.  
ROOM FOR 3RD DRIVE  
POWER SUPPLY. FAN**

**SALE!**

**MINDSET COMPUTERS  
MODULES  
SOFTWARE**

**ATARI** WE SELL EVERYTHING  
FOR ATARI

**SCHOOLS NOTE: NETWORK  
4 Ataris to Drive and/or Printer  
ONLY \$125 + CABLES**

**TI OWNERS** WE STOCK  
CORCOMP STUFF

**Dual Power Supplies**

- Horizontal - 12x12 1/2 ..... \$69.95
- Vertical - 7x12x6 ..... \$69.95
- Single Horiz. P/S - 6x12x3 1/2 ..... \$44.95
- 2-Drive Cable ..... \$21.00
- 4-Drive Cable ..... \$32.00
- Dual Case, Horiz. or Vert. (W/O P/S) ..... \$29.95
- Single Case, Horiz. (w/o P/S) ..... \$21.95